

Remarks:

Applicant has carefully studied the non-final Examiner's Action mailed June 11, 2008. Applicant thanks the Examiner for their careful attention in reviewing the application. The amendments appearing above and these explanatory remarks are believed to be fully responsive to the Action. Accordingly, this important patent application is now believed to be in condition for allowance.

Applicant responds to the outstanding Action by centered headings that correspond to the centered headings employed by the Office, to ensure full response on the merits to each finding of the Office.

Status of the Claims

Claims 1-17 and 19 were pending in the Office Action mail dated June 11, 2008 (due to a misnumbering of claims by Applicant claims 1-17 and 19 were presented, whereas they should have been consecutively numbered 1-18 as indicated by the Examiner at the bottom of page 2 of the Office Action). Claims 10, and 12-17 were withdrawn from consideration by the Office. (The nature of the withdrawal was not immediately clear as there did not appear to have been a restriction imposed). Thus, claims 1-9, 11 and 18 were pending and under examination.

Claims 9-19 are canceled herein. Each of claims 1-8 are amended and new claims 20-35 are added.

Claims 1-4 are amended herein to recite "[a] quinoa fruit protein concentrate ..." as opposed to "[a] quinoa protein concentrate ..." to more fully reflect the identity/composition and source of the protein concentrate. Throughout the application reference is made to isolation of protein from the quinoa grain (e.g. para. [0010] – "The present invention provides a new source of plant protein, termed "quinoa protein concentrate (QPC)", prepared from quinoa (*Chenopodium quinoa* Chenopodiaceae) grain, ..."). At para. [0008] of the specification it is provided that "Quinoa is a pseudocereal named for its production of small grain-like seeds, although the actual harvested grain is a single seeded fruit." Thus, it is more technically correct to say that isolation of the protein is from the "fruit" as opposed to the "grain", and thus, reference is made in claims 1-4 to the quinoa fruit.

Claim 5 is amended herein to recite the step of “separating the embryo-rich fraction from the perisperm-rich fraction of the comminuted quinoa grain...” Support for this amendment can be found in Scheme 3, on page 10 and paras [0024], [0025] and [0031]. The claim has further been amended to correct matters of form and punctuation and to make explicit what was implicit in the claim.

Claim 6 has been amended to specify a pH range as opposed to merely reciting “an appropriate pH...” Support for the recited range can be found in the second sentence of para. [0027]. Claim 6 has further been amended to refer to the step by the nature of the action to be performed as opposed to a letter reference (i.e. “after ~~step (e)~~ the step of separating solubilized protein...” – step (e) of claim 5 was directed to separating solubilized protein). Claims 7 and 8 have been similarly amended to refer to the nature of the step and not refer to the step by letter designation.

Support for the limitations of claims 20-25 can be found in Scheme 3 on page 10. Support for the limitations of claims 26-30 can be found in Scheme 1 on page 8. Support for the limitations of claims 31-34 can be found in Scheme 2 on page 9. Support for the limitations of claim 35 can be found in para [0023].

No other claims have been amended, canceled or withdrawn. Therefore, claims 1-8 and 20-35 are currently pending and under examination.

Priority

Applicant acknowledges the Office’s statement regarding the priority date of December 16, 2003 on page 2 of the Office Action dated June 11, 2008.

Specification

The Office has objected to the specification due to certain informalities. More particularly, the Office has indicated an informality on page 1 of the specification and directed applicant to update the priority data with a paragraph to related applications.

It is first noted that a preliminary amendment was submitted on June 07, 2006, which appears directed towards updating the priority. It is not immediately clear if the Office makes the instant objection in light of that preliminary amendment or simply missed it in their earlier

review of the application. Nevertheless, Applicant herein deletes that preliminary amendment and adds the requested information to the specification.

Applicant herein submits an amendment to page 1 of the specification identifying the present application as “the National Stage of International Application No. PCT/US2004/042296, filed December 16, 2004, which claims priority to U.S. Provisional Patent Application 60/530,219, entitled, “Quinoa Protein Concentrate, Production and Functionality”, filed December 16, 2003, the contents of which applications are herein incorporated by reference.” In light of Applicants’ amendment to the specification it is respectfully requested that the Office withdraw the objection to the specification.

Claim Objections

Multiple dependent claims:

Claims 13-15 stand objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only.

Claims 13 and 15 have been canceled in the instant response, rendering moot the objection to the claims.

Numbering of the claims:

The Office has indicated that “[t]he numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution.”

Applicant acknowledges the Office’s action renumbering the claims and has adhered to this numbering in presenting the claims above. Furthermore, claims 18 and 19 are listed in the instant response as canceled, with the newly presented claims staring at claim 20. Applicant started at claim 20 to avoid any confusion that might result if a new claim 19 was presented in the instant response, where that claim differed from previously presented, misnumbered claim 19.

Claim Rejections – 35 U.S.C. § 112

Applicant acknowledges the quotation of 35 U.S.C § 112, second paragraph.

Claims 5-8 stand rejected under 35 U.S.C § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Alkaline solution:

The Office has indicated that “Claim 5, step (c), recites extracting the protein from the defatted quinoa in alkaline solution. It is unclear if the protein is extracted using alkaline solution or if the defatted quinoa is immersed in alkaline solution. Further clarification is requested.”

Claim 5, as amended, recites in part “extracting the protein from the defatted quinoa [[in]] using an alkaline solution to solubilize the protein in the defatted quinoa ...” Support for the amendment to the claim can be found in paragraphs [0025] and [0026] of the specification as filed; most particularly at paragraphs [0025] where it is stated “To extract protein, the defatted quinoa flour was suspended in 0.03 mol/l sodium hydroxide and stirred mechanically at ambient temperature ranging from 2 to 5.5 hours to maximize solubility of the protein.” Thus, the protein is extracted using an alkaline solution.

Appropriate pH:

The Office has stated that: “Claim 6 recites an appropriate pH. It is unclear what constitutes as an appropriate pH.”

Claim 6 has been amended to recite “The method of claim 5 further comprising a step of purifying the protein by isoelectric precipitation at ~~an appropriate pH~~ a pH of about 3.0 to about 6.5 ...” Support for the range recited in the claim can be found in the second sentence of paragraph [0027].

“the pH”:

The Office has indicated that “Claim 7 recites the limitation ‘the pH’ in the claim. There is insufficient antecedent basis for this limitation in the claim of its parent claim.”

MPEP 2173.05(e) (regarding Lack of Antecedent Basis) provides:

Inherent components of elements recited have antecedent basis in the recitation of the components themselves. For example, the limitation “the outer surface of said sphere” would not require an antecedent recitation that the sphere has an outer surface. See *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359, 61 USPQ2d 1216, 1218-19 (Fed. Cir 2001) (holding that recitation of “an ellipse” provided antecedent basis for “an ellipse having a major diameter” because “[t]here can be no dispute that mathematically an inherent characteristic of an ellipse is a major diameter”).

Claim 7 recites the “[t]he method of claim 5 wherein the pH of ~~step (e)~~ the resulting

alkaline solution...” Claim 5, step (c) recites “an alkaline solution...” It is submitted that pH is an inherent characteristic of an alkaline solution. Therefore, the limitation of the pH would find antecedent basis in the recitation of the alkaline solution.

“the extraction in step (2)...”

The Office has noted that “Claim 8 recites wherein the extraction in step (2) is carried out by a solvent or a mechanical means. Claim 8 is dependent on claim 5. It should be noted that there is no step (2) in claim 5. Further, it is unclear what type of solvent should carry out the extraction.”

Claim 8 has been amended to recite “wherein the oil extraction is carried out by ...” as opposed to “the extraction in step (2) is carried out by ...” Claim 5, upon which claim 8 is dependent, has an oil extraction step (i.e. extracting the oil from the embryo-rich fraction of the comminuted quinoa grain leaving defatted quinoa...”).

Claim 8 has been further amended to recite that the solvent is a nonpolar solvent. Support for this amendment can be found in paragraph [0024] of the specification as originally filed.

Based upon the amendments to the claims and the explanations presented above, it is respectfully requested that the Office withdraw the rejection of claims 5-8 under 35 U.S.C § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim Rejections – 35 U.S.C. § 103

Applicant acknowledges the quotation of 35 U.S.C § 103(a).

Claims 1-4 and 9:

Claims 1-4 and 9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Horisberger et al. (US 4072666) (“Horisberger”). It is respectfully submitted that the rejection of claim 9 is rendered moot by its cancelation in the instant response. With respect to claims 1-4, Applicant respectfully traverses this rejection on the grounds that one or more elements are missing from the cited combination.

Claim 1, as amended, is directed to “[a] quinoa fruit protein concentrate having a protein content of at least about 50 wt % on a dry weight basis.” As discussed above, and in “Quinoa is a pseudocereal named for its production of small grain-like seeds, although the actual harvested grain is a single seeded fruit.” Thus, the product of claim 1 is a protein derived from the quinoa fruit. In contrast, Horisberger teaches that “[t]he vegetable starting material of the process is conveniently an aqueous liquid or juice obtained from a leaf protein source, the term “leaf” not being restricted to the actual leaves of a plant, but including other parts (stems, etc) containing both chloroplastic and cytoplasmic proteins, *but excluding seeds*.”¹ (emphasis added) Thus, Horisberger would explicitly exclude seed portions from the vegetable starting material. Additionally, in the case of quinoa, a quinoa fruit protein concentrate would have a different composition from a protein concentrate of quinoa leaves. This has a number of important facets regarding the product. First, the nutrition profile would be different between quinoa fruit protein concentrate and protein isolated from the leaf. Protein isolated from the leaf is limiting in certain amino acids, whereas the QPC of the invention is amino acid balanced (i.e. the QPC of the invention has a superior amino acid profile to that from quinoa leaves, as well as protein isolated from many other plant sources). Second, the color of the protein isolated from the fruit would differ from that isolated from the leaves. This impacts its use in other products and/or in uses where color may be important. Third, proteins isolated from the seed of a plant have a significantly different taste from those isolated from other parts of the plant such as the leaf. Moreover, taste is a critical feature in a product intended for human consumption. Lastly, the functionality (i.e. the ability of the product to be used or useful in other systems) differs between the QPC of the invention and a quinoa protein product isolated from quinoa leaves as in the Horisberger patent.

Based upon the foregoing it is respectfully requested that the Office withdraw the rejection of claims 1-4 under 35 U.S.C. 103(a) as being unpatentable over Horisberger et al. (U.S. Patent No. 4,072,666).

Claims 11 and 18:

¹ U.S. Patent No. 4,072,666 to Horisberger et al. at column 1, lines 34-39.

Claims 11, 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Slimak (US 4911943).

It is respectfully submitted that the rejection of claims 11 and 18 is rendered moot by their cancelation in the instant response.

Claims 5-8:

Claims 5-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Garrison et al. (U.S. Patent No. 4,175,075) in view of Horisberger et al. (U.S. Patent No. 4,072,666) (“Garrison in view of Horisberger”). Applicant respectfully traverses this rejection on the grounds that one or more elements are missing from the cited combination.

Claim 5, as amended, recites:

5. A method of processing quinoa grain to isolate protein comprising the steps of:

comminuting or milling the quinoa grain;

separating the embryo-rich fraction from the perisperm-rich fraction of the comminuted quinoa grain;

extracting the oil from the embryo-rich fraction of the comminuted quinoa grain leaving defatted quinoa;

extracting the protein from the defatted quinoa using an alkaline solution to solubilize the protein in the defatted quinoa;

separating solubilized protein in the alkaline solution from the insoluble fiber of the defatted quinoa; and

drying the separated protein, whereby a quinoa protein concentrate containing at least about 50 wt% protein is obtained.

It is respectfully submitted that Garrison in view of Horisberger does not teach, nor render obvious, a claimed method having the step of “separating the embryo-rich fraction from the perisperm-rich fraction of the comminuted quinoa grain...” as in amended claim 5. Nor does

Garrison in view of Horisberger teach, or render obvious, the step of “extracting the oil from the embryo-rich fraction of the comminuted quinoa grain leaving defatted quinoa...” Instead, Garrison teaches extracting oil from comminuted vegetable seeds, without removal of the perisperm-rich fraction.² The Horisberger patent fails to resolve these deficiencies in Garrison. Therefore the cited combination of Garrison in view of Horisberger does not render obvious the claimed subject matter. Furthermore, claims 6-8 are dependent upon claim 5 and therefore would include all of its limitations, thus rendering them allowable as being dependent upon independent claim 5. Based upon the foregoing it is respectfully requested that the Office withdraw the rejection of claims 5-8 under 35 U.S.C. 103(a) as being unpatentable over Garrison et al. (U.S. Patent No. 4,175,075) in view of Horisberger et al. (U.S. Patent No. 4,072,666).

Conclusion

For the reasons cited above, Applicant believes that claims 1-8, as amended, and new claims 20-35 are patentable and in condition for allowance.

If the Office is not fully persuaded as to the merits of Applicant’s position, or if an Examiner’s Amendment would place the pending claims in condition for allowance, a telephone call to the undersigned at (813) 925-8505 is requested.

Very respectfully,
SMITH & HOPEN

/michael m mcgaw/

By: _____
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Dated: November 11, 2008

² See US Patent No. 4,175,075 to Garrison et al. at col. 1, line 38 and col. 6, lines 24-29.

CERTIFICATE OF ELECTRONIC TRANSMISSION TRANSMISSION
(37 C.F.R. 2.190(B))

I HEREBY CERTIFY that this Amendment A is being electronically transmitted to the United States Patent and Trademark Office through EFS Web on November 11, 2008.

Date: November 11, 2008

/erica gossage/

Erica Gossage